CLAIMS

What is claimed:

1. (Currently amended) An AC-DC adapter interface, for providing power to a utility device and a battery for powering said utility device ~~charger circuit~~, comprising:

a first DC path for supplying DC power from a DC power source to said utility device;

a second DC path coupled to said first DC path including a DC-DC converter therein for providing battery charging current for charging said battery;

circuitry for measuring a total current flow through said first DC path supplied by said DC source, said total current including load current for said utility device and said charging current;

said adapter interface being ~~that is~~ operative to rapidly interrupt the supply of said battery charging current, while maintaining said load current flow to said utility device, in response to ~~the total current being drawn from said adapter~~ said total current flow exceeding a prescribed limit, and thereafter allowing [[the]] said battery charging current to gradually increase to a level that will not cause said total current flow ~~the total current being drawn from said adapter~~ to exceed said prescribed limit.

2. (Currently amended) ~~A~~ The DC power interface according to claim 1, further comprising, ~~having a first DC path for supplying DC power from a DC power source to a utility device, and a second DC path for charging a battery that can be used for powering said utility device, comprising:~~

an input port that is adapted to be coupled to said DC power source;

a first output port that is adapted to be coupled to said utility device and is coupled to said first input port by way of said first DC path;

a second output port that is adapted to be coupled to said battery and to said second DC path;

[[a]] said battery charging circuit ~~coupled to said first DC path and~~ being operative to generate DC power for application to said second DC path and said second output port for charging said battery; and

a control circuit including said circuitry for measuring said total current flow ~~coupled to monitor current flow through said first DC path and~~ being operative to interrupt or reduce current drawn by ~~the operation of~~ said battery charging circuit in response to said total current flow ~~through said first DC path~~ exceeding a prescribed threshold.

3. (Currently amended) The DC power interface according to claim 2, wherein said ~~battery charging circuit~~ DC-DC converter contains a pulse width modulator controlled power generation circuit, and said control circuit is operative to interrupt the operation of said pulse width modulator, in response to said total current flow ~~through said first DC path~~ exceeding said prescribed threshold.

4. (Original) The DC power interface according to claim 3, wherein said prescribed threshold is a value in excess of one-hundred percent of a rated current drawn by said utility device.

5. (Original) The DC power interface according to claim 3, wherein said control circuit comprises a one-shot that produces an output pulse of sufficient duration to interrupt operation of said pulse width modulator.

6. (Currently amended) The DC power interface according to claim 3, wherein said control circuit further comprises an error amplifier that is coupled to controllably adjust

the duty cycle of said pulse width modulator, in response to said total current flow ~~through said first DC path~~ exceeding a reference current less than said prescribed threshold.

7. (Currently amended) A DC power interface, comprising:

~~having~~ a first DC path for supplying DC power from a DC power source to a utility device, and a second DC path for charging a battery that can be used for powering said utility device~~, comprising:~~;

an input port that is adapted to be coupled to said DC power source,

a current sensor in series with said input port for measuring a total current flow through said first DC path supplied by said DC source, said total current including load current for said utility device and charging current for said battery;

a first output port that is adapted to be coupled to said utility device and is coupled to said ~~first~~ input port by way of said first DC path;

a second output port that is adapted to be coupled to said battery and to said second DC path;

a battery charging circuit comprising a DC-DC converter including a pulse width modulator, said modulator having at least one control input, said battery charging circuit coupled to said first DC path and being operative to generate ~~DC power for application to said second DC path and~~ said charging current into said second output port for charging said battery; and

a control circuit including a sense amplifier ~~to~~ for monitoring said total current flow ~~through~~ and generating a measured voltage at its output relating to said total current flow, and structure for generating a current limit representative voltage, and

at least one response loop for receiving said measured voltage and said current limit representative voltage, an output of said response loop coupled to said control input, wherein ~~said first DC path and being operative to cause said battery charging circuit to reduce the~~ an amount of said battery charging current supplied ~~thereby~~ by said battery

charging circuit is reduced in response to said total current flow ~~through said first DC path~~ exceeding a prescribed threshold current limit.

8. (Currently amended) The DC power interface according to claim 7, wherein said ~~battery charging circuit contains~~ response loop comprises an overcurrent comparator, ~~pulse width modulator controlled power generation circuit, and said control circuit comprises a~~ an output of said overcurrent comparator coupled to a one-shot, said one shot coupled to said control input, wherein said one shot [[that]] produces an output pulse that causes a reduction in the duty cycle of said pulse width modulator, in response to said total current flow ~~through said first DC path~~ exceeding said prescribed threshold.

9. (Currently amended) A method of operating a DC power interface having:

a first DC path for supplying DC power from a DC power source to a utility device;

a second DC path for charging a battery that can be used for powering said utility device;

an input port that is adapted to be coupled to said DC power source;

a first output port that is adapted to be coupled to said utility device and is coupled to said first input port by way of said first DC path;

a second output port that is adapted to be coupled to said battery and to said second DC path; and

a battery charging circuit comprising a DC-DC converter including a pulse width modulator, said modulator having a control input, said battery charging circuit coupled to said first DC path and being operative to generate DC power for application to said second DC path and said second output port for charging said battery;

said method comprising the steps of:

(a) monitoring total current flow through said first DC path[[,]] supplied by said DC source, said total current including load current for said utility device and charging current for said battery; and

(b) controllably reducing the effective operation of said battery charging circuit to reduce said charging current in response to said total current ~~flow through said first DC path~~ as monitored in step (a) exceeding a prescribed threshold.

10. (Original) The method according to claim 9, wherein said battery charging circuit contains a pulse width modulator controlled power generation circuit, and step (b) comprises selectively interrupting the operation of said pulse width modulator, in response to current flow through said first DC path exceeding said prescribed threshold, and thereafter allowing said pulse width modulator to gradually resume control of operation of said power generation circuit.

11. (Original) The method according to claim 9, wherein said battery charging circuit contains a pulse width modulator controlled power generation circuit, and step (b) comprises controllably and repetitively reducing the duty cycle of said pulse width modulator, as necessary, in response to current flow through said first DC path exceeding said prescribed threshold, to reduce current flow through said first DC path to no more than said prescribed threshold.

12. (Original) The method according to claim 9, wherein said prescribed threshold is a value in excess of one-hundred percent of a rated current drawn by said utility device.

13. (New) The DC power interface according to claim 7, wherein said at least one response loop comprises a first and a second loop having different response times.

14. (New) The DC power interface according to claim 13, wherein said first loop is a faster loop as compared to said second loop, said first loop comprising:

an overcurrent comparator, an output of said overcurrent comparator coupled to a one-shot, said one shot coupled to said control input, wherein said one shot ~~that~~ produces an output pulse that causes a reduction in the duty cycle of said pulse width modulator, in response to said total current flow exceeding said prescribed threshold, and

a second response loop, said second response loop be a slower loop comprising an error amplifier driving said control input of said modulator.